

## **ATTACHMENT 6 - Product Description**

### **Overview**

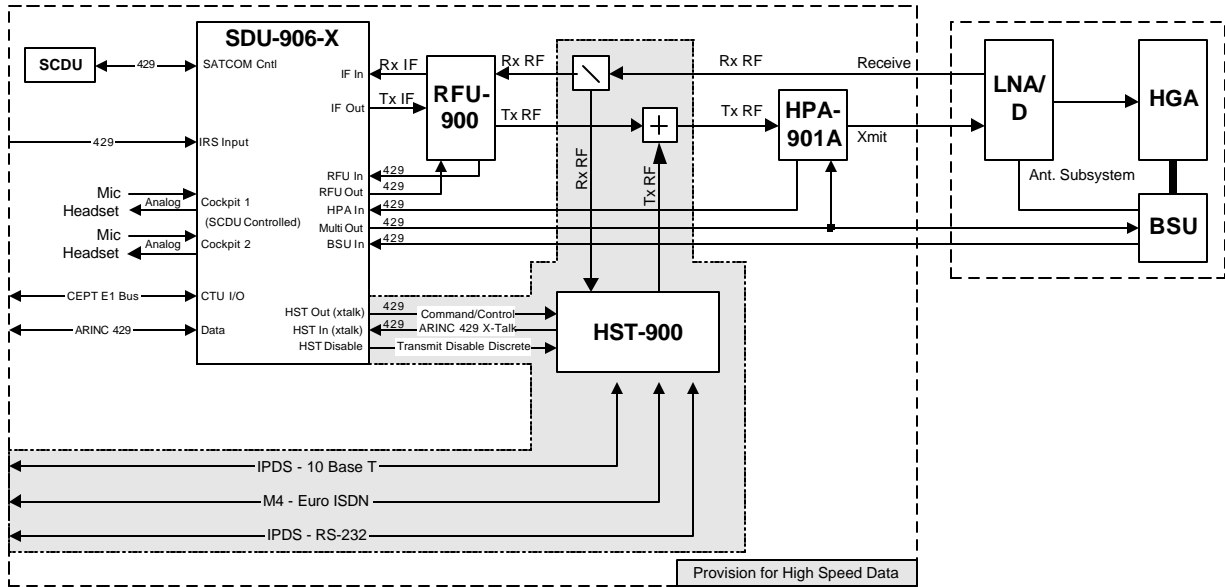
The HST-900 is an additional unit designed to work with the existing SAT-906 SATCOM system. The original SATCOM system consists of the following previously FCC certified components:

| <b>Type Number</b>               | <b>Name</b>          | <b>Manufacturer</b> | <b>FCC ID</b> |
|----------------------------------|----------------------|---------------------|---------------|
| SDU-906-1<br>(1 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0309 |
| SDU-906-2<br>(2 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0310 |
| SDU-906-3<br>(3 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0311 |
| SDU-906-4<br>(4 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0312 |
| SDU-906-5<br>(5 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0313 |
| SDU-906-6<br>(6 channel version) | Satellite Data Unit  | Rockwell Collins    | AJKPN822-0314 |
| RFU-900                          | Radio Frequency Unit | Rockwell Collins    | AJKPN822-8849 |
| HPA-901A                         | High Power Amplifier | Rockwell Collins    | AJKPN8220953  |
| Antenna System                   |                      | various             | n/a           |

**Table 1 – List of Equipment**

The units listed above have all previously received FCC Type Certification. The SDU-906 and HPA-901A require software modifications to support the addition of the HST-900. The modifications do not result in changes that affect previously submitted test data for these units.

The changes necessary to add an HST-900 to the existing SAT-906 System are highlighted in the shaded area of the figure below:



**Figure 1 - SAT-906 System with HST-900**

The HST-900 will add the INMARSAT Swift 64 service to the existing INMARSAT aeronautical services all ready supported by the SAT-906 system.

By incorporating the Swift 64 service from INMARSAT, the HST-900 High-Speed Transceiver will provide 64 kilobits per second connectivity using the existing SAT-906 antenna and high-power amplifier, HPA-901A. The HST-900 supplies interfaces to Ethernet, ISDN and RS-232 which will provide real time passenger e-mail and Internet access as well as the provisioning for other future high speed data applications such as real time cabin surveillance to the ground, file server and integrated information systems cockpit applications.

***HST-900 Equipment Specifications***

| CHARACTERISTIC             | SPECIFICATION                           |
|----------------------------|---|
| Digital interface          |   |
| Crosstalk Bus              | High-speed ARINC 429 input and output   |
| Ethernet User Interface    | 10 Base T input and output              |
| ISDN User Interface        | 64 kbps ISDN Euro input and output      |
| RS-232 User MPDS Interface | 115.2 kbps RS-232 input and output      |
| RS-232 Data Loader Port    | 115.2 kbps RS-232 input and output      |
| Input characteristics      |   |
| Frequency range            | 1530.0 to 1559.0 MHz                    |
| Impedance                  | 50 Ω nominal                            |
| Vswr                       | 2.0:1 max                               |
| Signal input level         | -100 dBm to -60 dBm                     |
| Output characteristics     |   |
| Frequency range            | 1626.5 to 1660.5 MHz                    |
| Impedance                  | 50 Ω nominal                            |
| Load vswr                  | 2.0:1 operational, infinite, survival   |
| Output power               | -6.5 dBm to 22 dBm in 0.5 dB increments |

**Table 2 – Equipment Specifications**

## HST-900 Hardware Overview

The diagram shows the major functional blocks of the HST-900 unit.

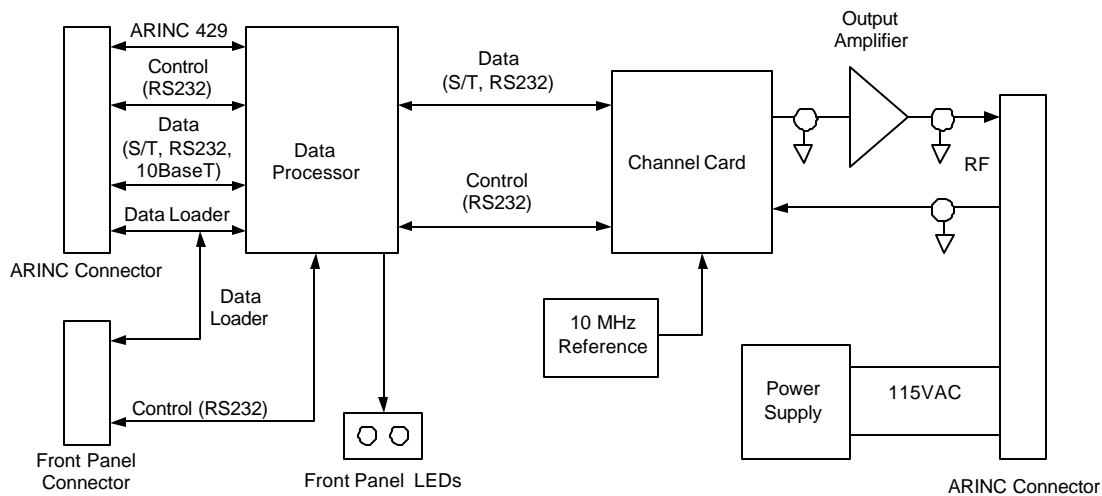


Figure 2 - HST-900 Functional Block Diagram

### Mechanical

The HST-900 is housed in a 2-MCU-size unit with mounting requirements according to the ARINC600 specification. The HST-900 chassis is designed for either forced air or convection cooling. The front panel contains a data loader connector used to upload data to the HST-900 and set of LEDs to indicate unit status. It also contains a “self-test” button and corresponding LED indicators for active operator maintenance. A backplane assembly interfaces the Arinc 600 connector with the power supply, channel card, data processor card, and output amplifier. The HST-900 also contains an ovenized high stability crystal oscillator to provide a stable 10 MHz reference to the channel card.

### Channel Card

The Channel Card contains the entire physical layer to L band and the protocols of an M4 terminal. In addition to the basic M4 (including MPDS) functionality, the Channel Card interfaces with the Data Processor for command and control functions. Interfaces between the Channel Card and the Data Processor fall into the broad categories of Operational, BITE, Maintenance and Test and Approval.

Data interfaces to the Channel Card are ISDN BRI S/T for circuit switched data and RS-232 for packet data (MPDS). Voice services shall not be supported.

### Data Processor

The purpose of the Data Processor is twofold:

#### Control

The Data Processor shall mediate between the Channel Card and the SDU, performing protocol conversion as required ensuring proper control of the HST-900. It shall also provide configuration and testing capabilities.

**User Data**

The Data Processor shall provide data conversion between the ISDN and RS232 on the Channel Card and other interfaces as required (i.e., 10BaseT Ethernet). This may include providing OSI Layer 2 and Layer 3 services.

***Power Supply***

The Power Supply provides regulated power to the Channel Card, External Reference, Output Amplifier and Data Processor.

***External Reference***

The External Reference provides a stable 10 MHz reference signal to the Channel Card.

***Output Amplifier***

The Output Amplifier increases the power of the RF signal from the Channel Card to the required level.

***Backplane***

The Backplane is a passive module that provides interconnection between all other modules of the HST-900 and to the outside world.